

REMARKS/ARGUMENTS

Claims 1-23 are pending in the instant application, and claims 11-13 and 19-23 are withdrawn from consideration. Claims 1, 3 and 4 have been amended and new claim 24 have been added herein. Reconsideration of the outstanding rejections is respectfully requested for the reasons that follow.

Claim objections

Claims 1, 3 and 4 have been amended to correct obvious typographical errors. Therefore, withdrawal of the outstanding objections is respectfully requested.

Claim rejections under 35 USC 103

Claims 1-10 and 18 were rejected under 35 USC 103(a) as being unpatentable over Akoshima et al. (JP-8-120499) in view of Nakaoka et al. (US2004/0043242), Yamaoka et al. (JP62188785A) and JP51-025766A.

Akoshima does not teach or suggest electrolytically polishing a copper foil by sequentially dipping the copper foil in a plurality of electrolytic polishing solutions of different electrolytic polishing rates resulting from their different pHs, temperatures and/or corrosion inhibitor concentrations. Applicants' claimed methods permit controlling electrolytic polishing rates in adequate ranges for smoothing a certain degree of roughness.

Although Figures 1 and 2 of Akoshima show two baths, bath B is the roughening or plating step of a copper foil and bath A is the electrolytic polishing step. (See pages 9-10 of the English translation of Akoshima provided by the PTO). Akoshima is in fact directed to a technology of roughening a side of a copper foil without using a collecting roll, contrary to Applicants' methods' purpose of smoothing a copper foil. Nothing in Akoshima teaches or suggests modifying the single electrolytic polishing solution to a plurality of such solutions. The Nakaoka, Yamaoka and (JP51-025766) references also fail teach or suggest the features. Therefore, Applicants submit that amended claim 1, and claims 2-10 and 18, which depend from claim 1, are patentable over the cited prior art references and respectfully request withdrawal of the rejections of claims 1-10 and 18.

Claim 14 was rejected under 35 USC 103(a) as being unpatentable over Akoshima et al. (JP-8-120499) in view of Nakaoka et al. (US2004/0043242), Yamaoka et al. (JP62188785A) and JP51-025766A, and further in view of SU479820A. As explained above, the combination of over Akoshima et al. (JP-8-120499) in view of Nakaoka et al. (US2004/0043242), Yamaoka et al. (JP62188785A) and JP51-025766A does not teach or suggest electrolytically polishing a copper foil by sequentially dipping the copper foil in a plurality of electrolytic polishing solutions of different electrolytic polishing rates resulting from their different pHs, temperatures and/or corrosion inhibitor concentrations. The (SU479820A) reference also fails to teach or suggest the features.

Therefore, Applicants submit that claim 14 is patentable over the cited prior art references and respectfully request withdrawal of the rejection of claim 14.

Claim 15 was rejected under 35 USC 103(a) as being unpatentable over Akoshima et al. (JP-8-120499) in view of Nakaoka et al. (US2004/0043242), Yamaoka et al. (JP62188785A) and JP51-025766A, and further in view of Shieh et al. (US2003/0221974). As explained above, the combination of Akoshima et al. (JP-8-120499) in view of Nakaoka et al. (US2004/0043242), Yamaoka et al. (JP62188785A) and JP51-025766A does not teach or suggest electrolytically polishing a copper foil by sequentially dipping the copper foil in a plurality of electrolytic polishing solutions of different electrolytic polishing rates resulting from their different pHs, temperatures and/or corrosion inhibitor concentrations. The Shieh reference also fails to teach or suggest the features. Therefore, Applicants submit that claim 15 is patentable over the cited prior art references and respectfully request withdrawal of the rejection of claim 15.

Claims 16 and 17 were rejected under 35 USC 103(a) as being unpatentable over Akoshima et al. (JP-8-120499) in view of Nakaoka et al. (US2004/0043242), Yamaoka et al. (JP62188785A) and JP51-025766A, and further in view of Liu et al. (US2003/0178320). As explained above, the combination of Akoshima et al. (JP-8-120499) in view of Nakaoka et al. (US2004/0043242), Yamaoka et al. (JP-62188785A) and (JP-51025766A) does not teach or suggest electrolytically polishing a copper foil by

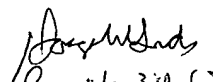
sequentially dipping the copper foil in a plurality of electrolytic polishing solutions of different electrolytic polishing rates resulting from their different pHs, temperatures and/or corrosion inhibitor concentrations. The Liu reference also fails to teach or suggest the features. Therefore, Applicants submit that claims 16 and 17 are patentable over the cited prior art references and respectfully request withdrawal of the rejections of claims 16 and 17.

New claim 24 is submitted as being patentable over the cited references for the same reasons set forth above with respect to amended claim 1.

In light of the foregoing, Applicants submit that all pending claims are patentable and respectfully request allowance of the instant application.

The Commissioner is hereby authorized to charge any fees or credit any overpayment to Deposit Account Number 02-2135.

Respectfully submitted,

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